

REMARKS

Claims 2-12, 16, 17, 21, 22, and 25-32 are pending.

Claims 1, 13-15, 18-20, 23, and 24 have been cancelled.

In the Office Action dated September 30, 2008, claim 32 was rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,351,742 (Agarwal); claims 11, 12, 16, 17, and 28 were rejected under 35 U.S.C. § 103 over U.S. Patent No. 6,516,310 (Paulley) in view of U.S. Patent No. 6,377,943 (Jakobsson); and claims 2, 10, 21, 22, 27, and 30 were rejected under § 103 over Paulley in view of Agarwal.

Applicant acknowledges the allowance of claims 3-9, 25, 26, and 31, and the indication that claim 29 would be allowable if rewritten in independent form.

REJECTION UNDER 35 U.S.C. § 102 OVER AGARWAL

Independent claim 32 was rejected as being purportedly anticipated by Agarwal. Applicant respectfully submits that Agarwal does not disclose each and every element of claim 32.

Note that claim 32 recites the selection of either a first join path or a second join path. In the first join path, the at least one of the selection predicate and projection of the join query is applied on a **join table instead of the first and second tables** in response to determining that the at least one of the selection predicate and projection is applied on a complex attribute. In the second join path, the at least one of the selection predicate and projection of the join query is applied on the first table before the join in response to determining that the at least one of the selection predicate and projection is applied on a non-complex attribute.

As disclosing the two “wherein” clauses, the Office Action cited passages in columns 4-6 of Agarwal. There is absolutely no hint anywhere in Agarwal of selecting the first join path of claim 32, in which the selection predicate or projection of the join query is applied on the **join table instead of the first and second tables**.

Although column 4 of Agarwal refers to an optimizer generating alternate combinations of steps in different execution plans, Agarwal provides absolutely not hint of applying a selection

predicate and projection (that is applied on a complex attribute) on a **join table instead of the first and second tables**.

Column 5 of Agarwal refers to determining the selectivity of a predicate, and column 6 of Agarwal refers to optimizers that operate on native and non-native objects. However, no teaching is provided in these passages of Agarwal regarding applying a selection predicate and projection (that is applied on a complex attribute) on a **join table instead of the first and second tables**.

Therefore, claim 32 is not anticipated by Agarwal.

REJECTION UNDER 35 U.S.C. § 103 OVER PAULLEY AND JAKOBSSON

Independent claim 11 was erroneously rejected as purportedly being obvious over Paulley and Jakobsson.

To make a determination under 35 U.S.C. § 103, several basic factual inquiries must be performed, including determining the scope and content of the prior art, and ascertaining the differences between the prior art and the claims at issue. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459 (1965). Moreover, as the U.S. Supreme Court held, it is important to identify a reason that would have prompted a person of ordinary skill in the art to combine reference teachings in the manner that the claimed invention does. *KSR International Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1741, 82 U.S.P.Q.2d 1385 (2007).

Applicant respectfully submits that, even if Paulley and Jakobsson could be hypothetically combined, the hypothetical combination of references would not have taught or hinted at the subject matter of claim 11. As recited in claim 11, determining the join path comprises selecting the join path in which the function (of the join query) is applied on the **join table rather than the first table or second table** (note that the join query specifies a join of the first table and the second table to produce the join table) to reduce cost.

The Office Action conceded that this feature of claim 11 is not disclosed by Paulley. 9/30/2008 Office Action at 4. However, the Office Action argued that Jakobsson discloses the claimed feature missing from Paulley. *Id.* Specifically, the Office Action cited the following passages of Jakobsson: column 1, lines 55-63; column 2, lines 2-30; column 2, lines 59-65.

The cited column 1 passage of Jakobsson illustrates an example join query. The first cited column 2 passage of Jakobsson refers to a join operation and join conditions specified by predicates in a WHERE clause of the join query. The first cited column 2 passage of Jakobsson also refers to a join operation being commutative and associative, with tables being able to be joined in any order without affecting the final result. The second cited column 2 passage of Jakobsson refers to a pruning technique to limit the number of join order permutations.

However, none of these passages provide any hint of selecting a join path in which the function (of the join query) is applied on the **join table rather than the first table or second table** (note that the join query specifies a join of the first table and the second table to produce the join table). Performing joins in different orders provide no hint of applying a function (selected from the group consisting of a selection predicate applied on a complex attribute, a projection applied on a complex attribute, and a user-defined data type method) on a join table rather than the first table or second table. Changing the order of performing a join, as taught by Jakobsson, merely indicates that the join predicate is applied on base tables in a different order.

Therefore, even if Paulley and Jakobsson could be hypothetically combined, the hypothetical combination of the references would not have led to the claimed subject matter.

In addition, no reason existed that would have prompted a person of ordinary skill in the art to combine the teachings of Paulley and Jakobsson. Neither of these references provide any hint of applying a function (selected from the group consisting of a selection predicate applied on a complex attribute, a projection applied on a complex attribute, and a user-defined data type method) on a join table rather than the first table or second table, as recited in claim 11. The Response to Arguments section of the Office Action referred to the teaching in Paulley regarding “join enumeration,” which “is a recursive process which iteratively adds another table to the prefix of a join strategy, whose length is denoted L_P , until the strategy is completely determined.” Paulley, 11: 12-15. Adding a table to the join strategy in the join enumeration process of Paulley refers to adding a **base** table to the join strategy. Nowhere in the join enumeration process of Paulley is there any hint of applying a function (selected from the group consisting of a selection predicate applied on a complex attribute, a projection applied on a complex attribute, and a user-defined data type method) on a join table rather than the first table or second table.

As discussed above, Jakobsson also similarly does not provide any hint of the claimed subject matter. Therefore, a person of ordinary skill in the art would not have been prompted to combine the teachings of Paulley and Jakobsson to achieve the claimed invention.

The obviousness rejection of claim 11 is therefore in error.

REJECTION UNDER 35 U.S.C. § 103 OVER PAULLEY AND AGARWAL

Independent claim 21 was rejected as purportedly obvious over Paulley and Agarwal.

Claim 21 recites, *inter alia*, that the optimizer is to select a join plan based at least in part on a comparison of a first cost of applying the function on a first table and a second cost of applying the function on a second table, wherein the optimizer is to select the join plan that applies the function on the one of the first table and second table with a lower cardinality, wherein the **second table** contains a **join result** of the first table and another table, and wherein the join query specifies the function being applied on the first table, and the optimizer to apply the function on the **second table (that is a join result) rather than the first table** in response to determining the second cost is lower than the first cost.

The Office Action conceded that the above subject matter is not disclosed by Paulley. 9/30/2008 Office Action at 6-7. Instead, the Office Action cited Agarwal as purportedly disclosing the claimed subject matter missing from Paulley. *Id.* at 7.

As explained above with respect to claim 32, Agarwal provides no hint of applying a function on a table that contains a join result rather than a base table. Therefore, even if Paulley and Agarwal could be hypothetically combined, the hypothetical combination of references would not have led to the claimed subject matter.

In view of the foregoing, the obviousness rejection of claim 21 is defective. Independent claim 28 is similarly allowable over Paulley and Agarwal.

CONCLUSION

Dependent claims are allowable for at least the same reasons as corresponding independent claims. In view of the allowability of base claims, the obviousness rejections of dependent claims have been overcome.

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Allowance of all claims is respectfully requested. The Commissioner is authorized to charge any additional fees and/or credit any overpayment to Deposit Account No. 50-4370 (9786).

Respectfully submitted,

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